

Patent Application of
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for

TITLE: Method and Apparatus for an Information Systems Improvement Planning
and Management Process

CROSS REFERENCE TO RELATED APPLICATIONS

The patent application is a continuation of a provisional patent application number 60/271,508
and confirmation number 3930.

SEQUENCE LISTING OR PROGRAM

See enclosed CD-Rom for the following 3 applications

EAS management Application

EAS Profiler Application

EAS System Research Database

BACKGROUND -FIELD OF INVENTION

This invention relates to methods and tools for managing software that businesses and organizations use to plan and execute day-to-day operations. It includes methods and tools to model a business's process objectives, manage problems and actions, prioritize improvements actions, detect the correct time to replace business software, and streamline the process of testing candidate business software solutions. Further, this invention includes dynamic and automated collaboration between the business with software under management, external consulting resources, and a research function that collects business software product data and acts as a clearinghouse for best practices.

BACKGROUND - DISCUSSION OF PRIOR ART

Companies and organizations invest significant financial and human resources in complex business software such as systems that control manufacturing planning and execution, customer management, and accounting. This type of software is called Enterprise Application Software (EAS) in this invention documentation. Selecting EAS is a complex and difficult project. Implementing EAS correctly is one of the most problematic challenges to businesses today. Furthermore, it rarely happens that ongoing improvements to EAS are made proactively to support evolving business processes. To compound the situation, the rate of change in business processes and EAS options is accelerating. The following industry research firms corroborate this situation (ERP and CRM are EAS packages):

Sixty percent of companies indicate an initial negative return on enterprise resource planning (ERP) software investment. That number can run as high as eighty percent,

depending on the specific software implemented. Twenty-three months is the average implementation time. (Meta Group - www.metagroup.com)

Ninety percent of ERP implementations end up late or over budget. (Standish Group - www.standishgroup.com)

The failure rate for customer relationship management CRM software projects will rise from the current 65% to over 80% by mid-2003. (Gartner Group - www.gartner.com)

Successful companies gain an edge on their competitors based on their ability to anticipate and plan for innovation with information technology. Picking the right combination of technologies, products and methods can result in market leadership and sustainable competitive advantage; picking the wrong ones can result in losing valuable time, and in some cases, complete failure. (Key IT Trends for 2002, Giga Information Group - www.gigaweb.com)

The current condition of business software in a typical mid-size and smaller company is demonstrated in FIG 2. A sample firm starts with 1000 requirements **155** (FIG 4). Initially, current EAS reasonably meets 820 requirements **155** (FIG 4) for an 82% potential score as shown on the system potential line **116** (FIG 2). The sample firm is using 500 requirements **155** (FIG 4) for a 50% utilization score as shown on the system usage line **117** (FIG 2). The difference between the system potential line **116** (FIG 2) and the system usage line **117** (FIG 2) represent requirements **155** (FIG 4) that are not being used that the current EAS systems can achieve through some legitimate means. The system potential line **116** (FIG 2) will fall as innovations in business process improvements and new EAS options result in new requirements **155** (FIG 4), which causes existing EAS systems to become less effective and obsolete over time. The system utilization line **117** (FIG 2) will fall at about the same rate as

the system potential line 116 (FIG 2) if there is no proactive EAS improvement management plans in place. Additionally, the improvements in new EAS options will cause the performance zone thresholds 170-172 (FIG 2) to trend upward as leading companies become more competitive because of successfully using new EAS. Periodic increases 118 (FIG 2) in the system potential line 116 (FIG 2) represent when the company acquires new software or discovers previously unknown capabilities in current EAS to achieve requirements 155 (FIG 4) that were previously above the system potential line 116 (FIG 2). Periodic increases 119 (FIG 2) to the system usage line 117 (FIG 2) represent improvement actions where latent EAS system capabilities were made active. When the system usage line 117 (FIG 2) nears or enters the crises zone 172 (FIG 2), there is typically a reaction to replace the main EAS system. This occurs at year two and seven. Notice the system potential line 116 (FIG 2) is in the superior zone 170 (FIG 2) most of the time, but in reality, most companies do not have a clear idea of their EAS potential. These businesses are simply unhappy, typically blame the existing EAS, and commission a replacement/selection project.

Prior Art for attempting to enable businesses to be successful with EAS was primarily based on the input and efforts of independent advisors and/or to a lesser degree on efforts of company staff members. The advisors offered services to help businesses in selecting and implementing EAS. These services were structured and presented so that the company mainly observed the process and was not empowered to help themselves. We have found no practical service that existed for proactive improvement management. Prior Art improvement actions typically were based on companies reacting to problems, which would result in a project with short time lines and impatient management oversight. The overall effect was that a majority of

companies consuming these EAS selection and implementation services and/or depended on internal staff members had negative end results.

EAS selection Prior Art details are provided in this paragraph. Except for very specific software tools and research databases for system selection, independent advisors used methodology that fundamentally was a by-product of their experience. Furthermore, many have experience in one or more EAS systems and therefore have a natural bias toward that software, or worse, have a financial interest in a particular package. The specific commercial tools for EAS system selection have three major shortcomings that are resolved with this EAS management system. First, they attempt to solve only a portion of the EAS selection process and provide no formal structure for the subsequent critical stages. Second, they included static lists of software functionality for consideration that cannot easily be modified and managed. Every business has custom requirements, issues and amplifications to many system requirements that must be captured and managed methodically. Third, software product research provided by these EAS selection tools was either limited (incomplete) and/or not validated.

EAS implementation Prior Art details are provided in this paragraph. After EAS is selected, software experts were hired to assist in EAS implementations. These experts generally followed standard implementation protocols and checklists but fundamentally did not know the process or the political and personnel problems at the business. It was not practical to include in the project the consulting time needed to gain this level of understanding. Further, they typically were not business process improvement experts and therefore would not recognize some or a majority of fundamental issues that would cause problems with the EAS implementation.

EAS improvement management Prior Art basically consisted of companies reacting to problems with their EAS systems. No formalized Prior Art services for EAS improvement management of existing EAS systems was found.

These problems with businesses using EAS did not exist to any substantial degree 5 to 10 years ago. Large companies and organizations have invested in EAS systems for more than 30 years and have generally had the resources and personnel talent to make effective use of them. This is not the case for mid-sized and smaller companies, which make up more than 95% of business entities in the United States. The increased availability of low cost computing resources, specifically hardware, network infrastructure, business software, and collaboration platforms (such as the Internet) have made large EAS improvement options available for all businesses and organizations and there is resultant pressure to take advantage of them. Mid-size and smaller firms have struggled to assimilate these new EAS efficiency improvement options. Large businesses also are experiencing difficulties with the new EAS options, and with their smaller suppliers with supply chain automation, but to a lesser degree.

OBJECTS AND ADVANTAGES

Accordingly, the main objects and advantages of this EAS management system are its ability to 1) formalize proper EAS management methodology, 2) manage EAS project details, and 3) coordinate and facilitate the appropriate participation by internal company personnel and external experts. As explained in the Background - Discussion of Prior Art section, Prior Art is lacking in all three of these areas.

Main Objects and Advantages #1: To formalize proper EAS management methodology for EAS improvement management, selection, and implementation, there are

two major and fundamental project standards necessary. First, there needs to be a deep understanding of what software functionality a business actually needs. Actual need is what a business wants adjusted for necessary changes to its current processes. These process changes are driven by better methods and the constraints and structure of available EAS. Second, EAS improvement project obstacles related to process, political, and personnel aptitude problems need to be identified and resolved. These two major project standards are resolved by the EAS management system. Business process experts and company staff, using specific investigation methodology, first develop the actual company needs. From this planning, financial models showing the estimated net benefit of meeting the company needs can be generated, which is usually significant and provides company management extra incentive for proper EAS project support. Then, EAS project obstacles are identified, again based on input from business process experts and company staff and using specific investigation methodology. With Prior Art these first two project standards generally are not conducted well as consultants and internal staff members have access to minimal appropriate methodology and, in some instances, consultants lack appropriate business process improvement skills relative to the company's industry. Also, the costs to conduct the appropriate level of investigation and to manage the project details with Prior Art methods would be prohibitive.

MAIN OBJECTS AND ADVANTAGES #2:

To properly manage EAS project details for EAS improvement management, selection, and implementation projects, an apparatus is required to manage the details of the EAS plan. These details consist of items such as EAS system requirements, issues, tasks,

personnel, and include many attributes and explanations of these items. The collection and management of EAS project detail is resolved by the EAS management system. With Prior Art there are no known practical options for specifically managing the comprehensive details for EAS improvement projects. There are software tools for purely managing EAS system requirements and/or custom software development, but these do not solve the specific need for collecting, analyzing, and managing all the EAS project detail in an appropriate collaborative environment. Further they are not part of a larger methodology framework focused on improving package EAS systems and a support strategy that is accessible by even very small companies.

Main Objects and Advantages #3: To coordinate and facilitate appropriate participation by internal company personnel and external experts for EAS improvement management, selection, and implementation, EAS projects require significant coordination and cooperation between the company, external advisors, and software experts. The EAS management system has methodology and software tools that enables and encourages collaboration by appropriate EAS project participants. Key to this is that the company is significantly enabled to control the EAS project. With Prior Art there is no formal method identified to achieve such coordination; enabling the company to take control of the EAS project is nearly non-existent, and they are limited to merely observing a complex and confusing process.

Additional specific objects and advantages of the EAS management system for ongoing EAS system improvement management are that the it makes the best improvement opportunities evident and manages the effort to clear obstacles that impede the process of improving EAS. The EAS management system also includes methods to observe new

demands placed on EAS as a result of business process improvement actions so that they are included in EAS improvement planning as soon as possible. Prior Art does not foster the proper level of control to conduct proactive EAS improvement management as such actions typically have been based on a reaction to problems.

Additional specific objects and advantages of the EAS management system for EAS selection are its capabilities to 1) collect and present appropriate and objective business software information to businesses selecting EAS; 2) orchestrate appropriate interface between EAS vendor sales functions and the company; and 3) greatly reduce the bias of any member of the EAS selection team. Prior Art limitations in consultants' experience and/or biases are addressed by the EAS management system. The three shortcomings of commercially available EAS selection tools, discussed in the Background - Discussion of Prior Art section, also are resolved.

Additional specific objects and advantages of the EAS management system for EAS implementation planning and management are that it puts control of EAS implementation in the hands of those who know the business; this is contrary to Prior Art, which puts control in the hands of software experts and consultants. As discussed earlier, but especially important for EAS implementation, the software EAS implementers typically have followed standard implementation protocols and checklists but fundamentally did not know the process, political, and personnel aptitude obstacles at the company. The consulting time needed to gain this level of understanding was not practical to include in the EAS project. Further, they typically were not business process improvement experts and therefore would not usually recognize fundamental issues that could cause problems with the EAS implementation. The EAS management system has resolved this problem.

Further objects and advantages of the invention will become apparent from consideration of the drawings and ensuing description.

SUMMARY

The invention economically solves the problem that companies and organizations have with not having business software properly support business processes.

DRAWINGS

In the drawings, closely related figures have the same number but different alphabetic suffixes.

Figure 1: Top-level flow chart describing the EAS management system.

Figure 2: Graphical representation of Prior Art for EAS management.

Figure 3: Enterprise Application Software - Example for manufacturing firm.

Figure 4: EAS Management Application Data Structure.

Figure 5: EAS improvement management methodology.

Figure 6: Graphical representation of sample company under EAS improvement management.

Figure 7: Entity collaboration for Enterprise Application Software (EAS) improvement management

Figure 8: EAS product research process

DETAILED DESCRIPTION

DESCRIPTION-FIG 1-PREFERRED EMBODIMENT

The preferred embodiment of the invention, a process to manage enterprise application software (EAS), is shown in FIG 1 and FIG 7, which show the major elements in the total process. The first major component is methodology **100** (FIG 1&7), specifically requirements and issues profiling techniques **180** (FIG 1&5) to establish a company's EAS foundation data, develop a plan for and put in place a process of prioritized EAS system improvement **186** (FIG 1&5), to detect the correct time to replaces some or all of the EAS, and to execute a process for EAS system selection **191** (FIG 1&5), and to implement new EAS systems **106a** (FIG 1) with the EAS system implementation planning and management process **207** (FIG 1&5) process. The second major component is the company's **105** (FIG 1&7) process used, specifically comprised of the current EAS systems **106a** (FIG 1) that is under management and the EAS foundation data **107** (FIG 1&7) that describes their EAS objectives and constraint. The third major component is an EAS management application **108** (FIG 1&7 and reference application CD) to collect and manage the EAS foundation data **107** (FIG 1&7). The fourth major component is the external team that provides expertise **109** (FIG 1). Specifically made from the business process consultant **110b** (FIG 1&7) trained in the methodology **100** (FIG 1&7), methodology subject matter expert **112** (FIG 1&7), and information and consulting support from EAS Vendors **111** (FIG 1,7&8). The information from EAS Vendor **111** (FIG 1,7&8) is obtained with specific research process **113** (FIG 1) and coordinated by the EAS research management function **114** (FIG 1,7&8).

A factor of increased options for EAS that facilitates business process is demonstrated in FIG 3 with an example manufacturing firm. This collection of EAS type packages and names, in FIG 3, is an evolving area. This example is presented to show the quantity and challenge to select, implement, integrate, and manage so many separate complex systems. The core EAS package is ERP **120** (FIG 3) and has typical functionality for manufacturing control, order entry, inventory control, and typical accounting. EAS types for internal planning and work execution are product data management PDM/computer aided design (CAD) **121** (FIG 3), manufacturing execution systems (MES) **122** (FIG 3), workflow systems **123** (FIG 3), product configurator for estimating and order entry **124** (FIG 3), quality control and statistical process control systems (SPC) **125** (FIG 3), maintenance management systems **126** (FIG 3), and Human Resource (HR) systems **131** (FIG 3). The planning for supplies and materials is handled by Supply Chain Planning software **127** (FIG 3) and is substantially driven by functionality for understanding known demand **128** (FIG 3), advanced planning and scheduling (APS) **129** (FIG 3), forecasting predicted orders **130** (FIG 3), sales force automation (SFA) **132** (FIG 3), and managing marketing activities **133** (FIG 3). The procurement of supplies and materials is handled by Supply Chain Execution software **134** (FIG 3) and is substantially driven by functionality for procurement **135** (FIG 3), logistics and transportation **136** (FIG 3), warehouse management systems (WMS) **137** (FIG 3), and software to optimize this complex activity **139** (FIG 3). Another major EAS product type is Customer Relationship Management (CRM) **140** (FIG 3) that has major components of sales force automation (SFA) **132** (FIG 3), marketing management **133** (FIG 3), customer service **142** (FIG 3), distribution partner/value added reseller management **143** (FIG 3), and website analytics **141** (FIG 3). Then field service software to manage the efforts of field service teams

and their demands for parts and materials **144** (FIG 3), distribution software **145** (FIG 3), which substantially uses the same EAS types as Supply Chain Execution **134** (FIG 3). Finally the major software type of enterprise resource management (ERM) **146** (FIG 3) substantially includes all the software discussed in this section.

Develop the company EAS foundation data

Back to FIG 1, a company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) is the material information about EAS requirements, issues, and details about a business and its current EAS systems **106a** (FIG 1). This data is used for proactive and prioritized EAS improvement actions. Before describing the methodology to collect the EAS foundation data **107** (FIG 1&7) a description is presented of the EAS foundation data **107** (FIG 1&7) and how it is recorded in the EAS management application **108** (FIG 1&7 and reference application CD).

The EAS management application for capturing EAS foundation data

Revisit the context of the EAS foundation data **107** (FIG 1&7) and the EAS management application **108** (FIG 1&7) that collects and manages this data. All parties, comprised of the company **105** (FIG 1&7), business process consultant **110b** (FIG 1&7), and the EAS methodology expert **112** (FIG 1&7) participate in collecting the EAS foundation data **107** (FIG 1&7) and the EAS system improvement management process. They all use the EAS management application **108** (FIG 1&7) in a collaborative environment. The type of information collected during requirements/issues profiling interviews for any type of EAS under management (see FIG 3 for examples) are changes, additions and/or amplifications to EAS system requirements, issues or problems, tasks or actions items, and persons and groups of persons that are responsible for issues, tasks, and requirements.

Turn now to FIG 4 for a description of the EAS foundation data **107** (FIG 1&7) and the structure provided by the EAS management application **108** (FIG 1&7). The sample company has multiple profiles for multi-location companies or for different companies. The EAS management application **108** (FIG 1&7 and reference application CD) can manage these complex situations.

Under the sample company **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) are detailed specifications of specific EAS under management **151-153** (FIG 4), called package types. The examples are EAS packages Enterprise Resource Planning (ERP) **151** (FIG 4), Customer Relationship Management (CRM) **152** (FIG 4) and Field Service **153** (FIG 4). All requirements, issues, tasks, and persons and groups must be associated with at least one Package Type **154** (FIG 4) when entered. All descriptions of managing company EAS foundation data **107** (FIG 1&7) are conducted in the EAS management application **108** (FIG 1&7 and reference application CD).

EAS requirements **155** (FIG 4) are comprised of pre-configured or built-in requirements (pre-loaded in the EAS management application **108** (FIG 1&7 and reference application CD)) that describe standard functionality to be considered and custom requirements for the company **105** (FIG 1&7) with EAS systems **106a** (FIG 1) under management. The EAS management team **267** (FIG 7) contacts the EAS research manager **114** (FIG 1,7&8) for industry or EAS application type pre-configured requirements. Once a requirement is accepted or entered it is either automatically or manually associated with a Package Type such as ERP **151** (FIG 4). Requirement attributes are then attributed and denote the value of the requirement (weighting as shown by the four values of critical, high, medium, and low). Requirements can be associated with one or more Issues **156** (FIG 4),

Tasks **157** (FIG 4) and Responsible Persons/Groups **158** (FIG 4) as needed. The EAS management application **108** (FIG 1&7 and reference application CD) has functions to transfer requirements from one category to another and to move a group of requirements from a Package Type such as Field Service **153** (FIG 4) to another Package Type such as ERP **151** (FIG 4).

Issues **156** (FIG 4) are considered any outstanding problem or uncertainty that is encountered. They can be related to any aspect of the EAS improvement project or about an unrelated process problem. Issue **156** (FIG 4) can cross-reference to Package Type(s) such as CRM **152** (FIG 4), requirements **155** (FIG 4), and persons and groups **158** (FIG 4), to facilitate their resolution. Attributes are applied to all Issues **156** (FIG 4) to enable focused and prioritized management and include, priority, topic, status, cost to resolve, benefit if resolved, date to start, and date to end.

Tasks **157** (FIG 4) are considered any action that is encountered and/or developed as Issues **156** (FIG 4) are processed. They can be related to any aspect of the EAS improvement project or about an unrelated process problem. Issues **156** (FIG 4) can cross-reference to Package Type(s) such as ERP **151** (FIG 4), requirements **155** (FIG 4), and persons and groups **158** (FIG 4), to facilitate their execution. Attributes are applied to Tasks **157** (FIG 4) to enable focused and prioritized management and include, priority, topic, status, cost to accomplish, and benefit if accomplished, date to start, and date to end.

Responsible Persons and Groups **158** (FIG 4) are any person or groups that have an interest in or responsibility for aspects of any Issue **156** (FIG 4), Task **157** (FIG 4) or requirements **155** (FIG 4) recorded in the company EAS foundation data file **107** (FIG 1&7). They can be related to any aspect of the EAS improvement project or about an unrelated

process problem. Responsible Persons and Groups **158** (FIG 4) can cross-reference to Package Type(s) such as Field Service **153** (FIG 4), requirements **155** (FIG 4), Issues **156** (FIG 4), and Tasks **157** (FIG 4). The EAS management application **108** (FIG 1&7 and reference application CD) produces planning reports to show specific Package Type(s) such as Field Service **153** (FIG 4), requirements **155** (FIG 4), Issues **156** (FIG 4), and Tasks **157** (FIG 4) related and outstanding for a specific Responsible Persons and/or Groups **158** (FIG 4).

Initial Requirements and Issues profiling

Requirements and issues profiling is the initial phase, which is the basis for any EAS improvement management work to develop the EAS foundation data **107** (FIG 1&7). Turn to FIG 5 to see a total representation of the EAS improvement management process and the element of the flow chart for requirements and issues profiling **180** (FIG 1&5).

The project setup phase **181** (FIG 5) is a preparation and planning stage for the immediate project team to ensure the team and company are ready to proceed. This team consists of members from the company **105** (FIG 1&7) with EAS systems **106a** (FIG 1) under management and members of the external team **109** (FIG 1), specifically the business process consultant **110b** (FIG 1&7) and if needed software product research from the research manager **114** (FIG 1,7&8). For more complex EAS improvement projects the methodology expert **112** (FIG 1&7) is involved.

The company **105** (FIG 1&7) familiarization phase **182** (FIG 5) includes a thorough company walk-through and research into the company's industry. A meeting follows this with general and departmental management to gain an understanding of their goals and concerns and discuss the need for process re-engineering and project related education. The business

process consultant **110b** (FIG 1&7) typically sets up the EAS management application **108** (FIG 1&7 and reference application CD) for a specific company project.

Begin the formal business process/requirements review **183** (FIG 5) by processing a set of general questions, called Executive Questions, to the company executives. The EAS management application **108** (FIG 1&7 and reference application CD) has an expert process that links the Executive Questions with a larger set of statements of system functionality. By virtue of the way the Executive Questions are answered, they will automate an initial requirements profile for standard accounting and operational system functions. This process provides a useful forum wherein senior and departmental management can discuss the project in a structured and comprehensive environment. These discussions can demonstrate management's attitude toward the project and how it can affect the project by uncovering philosophical alignments or conflicting visions.

Conduct the e-Business opportunity review **184** (FIG 5), which is a diagnostic that detects e-Business potential at the company **105** (FIG 1&7). This is comprised of a series of questions presented to departmental/functional managers. These managers record a numerical score and an automated process produces results that show the relative importance of e-Business type functionality for each function under review at the company **105** (FIG 1&7). The results influence the functional interviews **185** (FIG 5) to establish the details of the e-Business plan that then are recorded with other system requirements **155** (FIG 4), Issues **156** (FIG 4), and Tasks **157** (FIG 4) in the EAS management application **108** (FIG 1&7 and reference application CD).

Functional interviews **185** (FIG 5) to establish appropriate requirements **155** (FIG 4), Issues **156** (FIG 4), and Tasks **157** (FIG 4), for package types under study, such as ERP **151**

(FIG 4) are the key to the process. The business process consultant **110b** (FIG 1&7) prepares those to be interviewed with training on the overall process **181** (FIG 5), and specific instructions to review and comment on the automatically answered requirements for standard accounting and operational system functions. Company **105** (FIG 1&7) department management, system users, and representatives from other business functions that significantly interface with the function being reviewed participate. The interviews are lead by the business process consultant **110b** (FIG 1&7) and results are captured using a tape recorder or by an assigned scribe. The interview begins by the business process consultant **110b** (FIG 1&7) by having the company **105** (FIG 1&7) members from a particular function provide an overview of the transactions and process flow. Next discussed are the automatically answered requirements, workflow problems, manual, ineffective, and error-prone steps, and what users like about current systems. After the interview and as soon as practical the findings are recorded in the EAS management application **108** (FIG 1&7 and reference application CD). To better optimize the differentiating requirements for selection, implementation planning, and/or improvement management, the requirement **155** (FIG 4) weightings are spread in the following approximate percentages: <5% weighted Critical, 15% to 20% High, 50% to 60% Medium, and 20% to 30% Low. The EAS management application **108** (FIG 1&7 and reference application CD) has reporting that calculates these percentages automatically. Requirements **155** (FIG 4) are organized by category and if the appropriate category is not available, it can be entered in the EAS management application **108** (FIG 1&7 and reference application CD).

Research process

EAS product research process **113** (FIG 1&8) is completely demonstrated in FIG 8.

The process to enter and maintain research about a particular EAS vendor's **111** (FIG 1,7&8) product(s) begins with the EAS research manager/function **114** (FIG 1,7&8) contacting the new EAS vendor **111** (FIG 1,7&8). EAS vendor's **111** (FIG 1,7&8) product line management is briefed on the purpose and research techniques used and a technical expert **290** (FIG 8) in the particular EAS is selected. This technical expert **290** (FIG 8) is trained on the use of the EAS profiler application **291** (FIG 8 and reference application CD), a software tool used to record and refine information about a specific EAS **295** (FIG 8). The technical expert **290** (FIG 8) proceeds to answer standard questions presented in the EAS profiler application **291** (FIG 8 and reference application CD). The six answers codes for functionality questions about the particular EAS **295** (FIG 8) are:

Yes = A software clearly has the functionality in question either in its base configuration or through built-in, user accessed, customizing functions; or a software accomplishes most of what is stated and/or the functionality implied by a software functionality question and there are easy and reasonable workarounds to accomplish the rest of the functionality.

No = A software does not accomplish the function in question; it accomplishes less than half of what is stated and/or implied by the question and there are no reasonable workarounds.

Yes/C = A software accomplishes less than half of what is stated and/or the functionality implied by the question and there are reasonable workarounds.

Yes/3p = A software accomplishes a function by the use of an established third-party product. Established denotes a third-party partner with verified functionality that is

appropriately connected to an application. This third party-functionality should be accessible and useable as if it were part of the core application.

Yes/F = To denote that a function will be included in the next release.

Unclear = To denote that a functionality question is not clearly defined and needs more amplification from the EAS research manager **114** (FIG 1,7&8).

In addition to collecting and managing functionality data the EAS profiler application **291** (FIG 8 and reference application CD) has data fields for recording other information about EAS software vendor's **111** (FIG 1,7&8) products such as specifications (e.g. hardware on which the EAS runs), pricing, number of install, preferred industries and sizes of firms for which the specific EAS **295** (FIG 8) is suitable, and fundamentally is designed to capture useful information on EAS vendors **111** (FIG 1,7&8) and specific EAS **295** (FIG 8). From expert review of the software by the auditor **292** (FIG 8) and feedback of companies using the particular software, ratings for EAS software usability and quality of training and support are developed. These ratings are very important for companies such as the sample company **105** (FIG 1&7) and positively influence EAS vendors **111** (FIG 1,7&8) to improve this important service.

After the EAS vendor's technical expert **290** (FIG 8) completes the functionality questions, an independent auditor **292** (FIG 8) reviews the findings. Independent auditors **292** (FIG 8) are individuals or groups, screened by the EAS research manager **114** (FIG 1,7&8), which is knowledgeable about the particular EAS vendor **290** (FIG 8) and specific EAS **295** (FIG 8). They have no financial connection to the specific EAS vendor **290** (FIG 8). They can be business process consultants **110b** (FIG 1&7) who use the EAS improvement management methodology **100** (FIG 1&7) with companies **105** (FIG 1&7). The auditor is trained on using

the EAS profiler application **291** (FIG 8 and reference application CD) and audits the answers provided by the technical expert **290** (FIG 8). Using the same answer codes, the auditor challenges and may change functionality answers. For changes the auditor **292** (FIG 8) provides a confidence data value, which measures the auditor's level of confidence in the answer modification. When the audit is complete the software vendor **111** (FIG 1,7&8) is provided the updated data profile and in the EAS profiler application **291** (FIG 8 and reference application CD) produces a report that shows the changed answers to functionality questions and can challenge these changes. Data fields are available in the EAS profiler application **291** (FIG 8 and reference application CD) for the technical expert **290** (FIG 8) to apply any challenges to the auditor's **292** (FIG 8) answers and amplification notes. The EAS research manager **114** (FIG 1,7&8) receives this data into the EAS System research database **293** (FIG 8 and reference application CD), which automatically accepts the input from both parties, based on modifiable rules. These rules observe the auditor's **292** (FIG 8) confidence level in the answer changes and automatically accepts auditor **292** (FIG 8) functionality responses with a higher confidence and automatically accepts EAS vendor's technical expert **290** (FIG 8) answers where the auditor's **292** (FIG 8) confidence was lower. This automation is provided by the EAS profiler application **291** (FIG 8 and reference application CD).

Another cleansing of the specific EAS **295** (FIG 8) product data occurs from those that use this data **294** (FIG 8). Their feedback is collected and the auditors **292** (FIG 8) check it for validity.

The structure of this data collection process encourages the EAS vendors **111** (FIG 1,7&8) to be more diligent and provide reasonable responses. They realize all EAS vendors **111** (FIG 1,7&8) in the EAS systems research database **293** (FIG 8 and reference application

CD) are audited and therefore when users use the research data for improvement management and replacing EAS, that their software will be able to fairly compete.

EAS Improvement management

After the initial requirements/issues profiling is completed, the EAS management team **267** (FIG 7) will audit existing EAS systems **106a** (FIG 1) to develop an understanding of its total potential and level of utilization.

Before a description of procedures, turn to FIG 6 for a graphical representation **240** of a company under proactive EAS improvement management. The graph **240** (FIG 6) demonstrates the control when EAS system requirements **155** (FIG 4) are modeled and managed. A sample firm starts with 1000 requirements **155** (FIG 4). Initially, current EAS reasonably meets 820 requirements **155** (FIG 4) for an 82% potential score as shown on the system potential line **116** (FIG 6). The sample firm is using 500 requirements **155** (FIG 4) for a 50% utilization score as shown on the system usage line **117** (FIG 6). The difference between the system potential line **116** (FIG 6) and the system usage line **117** (FIG 6) represent requirements **155** (FIG 4) that are not being used that the current EAS systems can achieve through some legitimate means. This is the group of requirements that are managed and incrementally achieved, which causes the system usage line **117** (FIG 6) to move toward the system potential line **116** (FIG 6). Significant increases **119** (FIG 6) in the system usage line **117** (FIG 6) represent major improvement efforts.

The system potential line **116** (FIG 6) will fall as innovations in business process improvements and new EAS options result in new requirements **155** (FIG 4), which causes existing EAS systems to become less effective. Occasional spikes **118** (FIG 6) in the system potential line **116** (FIG 6) are based on a sample firm acquiring new software capabilities to

meet the requirements **155** (FIG 4) above the system potential line **116** (FIG 6). The sample firm starts with only half of all requirements **155** (FIG 4) being met with a 50% initial system usage line **117** (FIG 6). This is mid-way in the normal zone **171** (FIG 6) of systems effectiveness. During the first three years the sample firm makes many EAS improvements, causing the system usage line **117** (FIG 6) to move toward the system potential line **116** (FIG 6) until the two nearly converge at year four. At this point a full 38% of all known requirements are not met by the EAS system and a replacement project is justified. After selection and implementation both the system potential line **116** (FIG 6) and system usage line **117** (FIG 6) are in the superior zone **170** (FIG 6).

Turn to FIG 5 for a flowchart of the process for ongoing EAS system improvement **186**. The first step is to develop the requirements and issues profile **180** (FIG 1&5), which has been described in earlier sections. The next phase is to conduct a requirement audit **188** (FIG 5) to develop the company's **105** (FIG 1&7) starting points, for existing EAS systems **106a** (FIG 1), on the system potential line **116** (FIG 6) and the system usage line **117** (FIG 6). The EAS improvement team comprised of company **105** (FIG 1&7) members and external members **109** (FIG 1) first measures how the company's **105** (FIG 1&7) current EAS system **106a** (FIG 1) under management can support established requirements **155** (FIG 4) and second, which requirements **155** (FIG 4) are being utilized. All or part of the requirement audit **162** (FIG 4) is lead by the consultant **110b** (FIG 4) with the help of one or more selected company **105** (FIG 1&7) team members, depending on time and company staff resources available. The correct method is influenced by time available from the business process consultant **110b** (FIG 1&7) and the commitment, knowledge, and availability of the company's **105** (FIG 1&7) team.

Referencing back to FIG 4, for every requirement **155** (FIG 4) three specific audit data values are collected. The first audit value is the supported data value **163** (FIG 4), which indicates if and how the EAS system **106a** (FIG 1) under management at the company **105** (FIG 1&7) meets the requirement **155** (FIG 4). The second value is confidence **164** (FIG 4), which indicates how confident the auditor was in the supported data value **163** (FIG 4) applied to a specific requirement **155** (FIG 4). The third data element is the utilization/status data value **165** (FIG 4), which indicates the actual use status of the requirement **155** (FIG 4).

The supported data field **163** (FIG 4) records information on how the requirement **155** (FIG 4) is accomplished by the EAS system **106a** (FIG 1) under improvement management.

Response options and option descriptions, which can be enhanced as needed, are:

Yes: If the required functionality **155** (FIG 4) is automated to a significant degree directly by the EAS system **106a** (FIG 1) and has connectivity for sharing data as one would expect with current market EAS systems.

Yes/Custom: An identified and reasonable customizing option that can accomplish the requirement **155** (FIG 4) in a significantly automated manner and has appropriate connectivity to other EAS systems **106a** (FIG 1). Additional information should be gathered about details to achieve this. The EAS management application **108** (FIG 1&7 and reference application CD) has data fields to capture these amplifications.

Yes/3rd Party: An identified and reasonable third-party package/component that can accomplish the requirement **155** (FIG 4) in a significantly automated manner and has appropriate connectivity to other EAS (see FIG 3 for examples). Record details in the EAS management application **108** (FIG 1&7 and reference application CD).

Yes/Upgrade: If a requirement **155** (FIG 4) is to be accomplished through an upgrade to a newer release of the current system. This option applies only in improvement management of existing EAS systems **106a** (FIG 1). Record details in the EAS management application **108** (FIG 1&7 and reference application CD).

Yes/Future: If a requirement **155** (FIG 4) is to be accomplished through functionality in a future release of the existing EAS systems **106a** (FIG 1). Record details in the EAS management application **108** (FIG 1&7 and reference application CD).

No: There is not an identified and reasonable method to achieve the requirement **155** (FIG 4) at this time. The key words are identified and reasonable, as there are obviously workarounds for most any requirement.

Unanswered: The supported response **163** (FIG 4) for the requirement **155** (FIG 4) has not yet been considered.

The utilize/status data field **165** (FIG 4) accepts specific information on how the requirement **155** (FIG 4) is accomplished by the EAS systems **106a** (FIG 1) under improvement management. Response options and option descriptions, which can be enhanced as needed, are:

Yes: The requirement **155** (FIG 4) has been verified to be fully in use.

No: The requirement **155** (FIG 4) is not being fully used.

In Process: The requirement **155** (FIG 4) is in the process of being effected. Selecting this value removes the requirement **155** (FIG 4) from appearing on planning reports that study future improvement actions.

Suspended: This value is used when the requirement **155** (FIG 4) has been put on hold (e.g., fundamental process changes may be required before some requirements can be

effected). Selecting this value removes the feature from appearing on normal improvement and implementation planning reports. Consider setting a Task **157** (FIG 4) for taking action to reconsider or effect this requirement **155** (FIG 4), and/or enter information in requirement **155** (FIG 4) notes data field about why it is suspended.

N/A: Used for a requirement **155** (FIG 4) that is not a description of functionality and not subject to a simple Yes/No answer as to whether it is being used or not. Requirements **155** (FIG 4) with this value are removed from the EAS Management Application **108** (FIG 1&7 and reference application CD) improvement planning reports. For example, the system has to be scalable to 120 users is not a typical business process requirement **155** (FIG 4).

Unanswered: Whether the requirement **155** (FIG 4) is being used has not been established.

The person that audits the company's **105** (FIG 1&7) current EAS systems **106a** (FIG 1) is typically the business process consultant **110b** (FIG 1&7) and an assigned member on the company's **105**(FIG 1) EAS management team **267** (FIG 7). They collect the initial supported audit answers **163** (FIG 4) by interviewing current users and experts in the particular EAS package. If available, obtain audit information on the specific EAS package from the EAS research manager **114** (FIG 1,7&8). The EAS research manager **114** (FIG 1,7&8) can automatically input this information into the company data profile **107** (FIG 1&7). Each audit answer is given a confidence value **164** (FIG 4) that demonstrated the auditor's confidence in the accuracy of the supported answer **163** (FIG 4). The confidence data value **164** (FIG 4) options are high, medium, and low.

The quality of the initial supported audit responses **163** (FIG 4) will vary from total accuracy (confidence value **164** (FIG 4) equals high) to accepting an answer from an

unverified source (confidence value **164** (FIG 4) equals low). Having accurate supported responses **163** (FIG 4) is the basis for effective and smooth ongoing EAS system improvement **186** (FIG 5), as well as, EAS system implementation planning and management **207** (FIG 5). The confidence data field **164** (FIG 4) enables prioritized requirement-by-requirement **155** (FIG 4) clarification of supported answers **163** (FIG 4) resulting in improvement to the supported responses **163** (FIG 4). This will lead to the discovery of many pertinent software and process issues **156** (FIG 4).

Confidence answers **164** (FIG 4) for supported responses **163** (FIG 4) should be Medium or High to give reasonable credence to improvement (and implementation) planning and execution. At this point the auditing team works more intensely with a software expert (software vendor **111** (FIG 1,7&8), VAR, consultant) to better determine specific EAS functionality and strategies to effect functionality and therefore improve the supported values **163** (FIG 4) on a prioritized list of requirements **155** (FIG 4). Specific steps are:

Using the EAS management application **108** (FIG 1&7 and reference application CD) to develop a standard report, which demonstrates the percent of High, Medium, and Low confidence answers **164** (FIG 4) for a specific EAS package type (presented for all requirements **155** (FIG 4) and then requirements **155** (FIG 4) organized by category). This report also shows requirements **155** (FIG 4) with supported responses **163** (FIG 4) missing (shown by a supported data value **163** (FIG 4) of Unanswered).

Select requirements **155** (FIG 4) to improve the supported answers **163** (FIG 4). Ideally, there would be solid supported answers **163** (FIG 4) for all requirements **155** (FIG 4). If time is not an issue, isolate the subset of requirements **155** (FIG 4) with a Low confidence value **164** (FIG 4) and work to improve the answers. Using capabilities in the EAS

management application **108** (FIG 1&7 and reference application CD), develop a standard report to isolate this subset of all requirements **155** (FIG 4).

If time is limited, focus on the more important requirements **155** (FIG 4), those with a High or Critical weighting and Low confidence level **164** (FIG 4). Isolate this subset of the requirements **155** (FIG 4) using built-in reporting available in the EAS management application **108** (FIG 1&7 and reference application CD).

Refining the confidence level **164** (FIG 4) answers for the requirements **155** (FIG 4) is an iterative process. As groups of requirements **155** (FIG 4) are processed toward a solid supported response **163** (FIG 4), continue to review further requirement audit responses **164** (FIG 4) by using the drill down capabilities of reporting features in the EAS management application **108** (FIG 1&7 and reference application CD).

When the supported answers **163** (FIG 4) are completed (regardless of the confidence answers **164** (FIG 4), develop the system potential statistic, for each EAS under management, in the EAS management application **108** (FIG 1&7 and reference application CD). This shows the maximum capability of a specific EAS under management and produces the company's **105** (FIG 1&7) current location on the system potential line **116** (FIG 6).

The EAS management application **108** (FIG 1&7 and reference application CD) records requirement audit answers **162** (FIG 4) for multi-company scenarios by maintaining separate requirements **155** (FIG 4) for business units and for common requirements providing business units specific utilize/status data fields **165** (FIG 4).

Many times a requirement **155** (FIG 4) cannot be effected properly at the company **105** (FIG 1&7) because the underlying business process is not properly structured or other obstacles that are not a function of the EAS systems **106a** (FIG 1). In these cases, select the

correct supported value **163** (FIG 4) and record related information in the EAS management application **108** (FIG 1&7 and reference application CD) forms for Issues **156** (FIG 4), Task **157** (FIG 4), associated Responsible Persons and Groups **158** (FIG 4), and appropriate notes. As these Issues **156** (FIG 4) and Tasks **157** (FIG 4) are processed these obstacles will be removed in a timely and orderly fashion by virtue of their priority and other company financial and personnel resources available.

After requirements/issues profiling **180** (FIG 1&5) and the requirements audit **188** (FIG 5) the EAS management team **267** (FIG 7) begins conducting an EAS system improvement **189** (FIG 5), it is important to have a sense for the general capabilities of modern EAS systems before continuing to invest time and financial resources in the improvement of existing EAS systems **106a** (FIG 1). The EAS research manager **114** (FIG 1,7&8) provides detailed information on EAS systems **190** (FIG 5) contained in the EAS system research database **293** (FIG 8 and reference application CD).

Entity collaboration in EAS improvement management is shown in FIG 7 and demonstrates the continuous relationship between the EAS management team **267** (FIG 7), the EAS research manager **114** (FIG 1,7&8), and EAS software vendors **111** (FIG 1,7&8). The business process consultant(s) **110b** (FIG 1&7) is one or more consultants comes from a global body of business process consultants **110a** (FIG 7) based on consultant proximity to the company **105** (FIG 1&7), experience based on the company's **105** (FIG 1&7) size and industry, and EAS package types (e.g. ERP **151** (FIG4)) being managed. The global body of business process consultants **110a** (FIG 7) is developed and coordinated by the EAS research manager **114** (FIG 1,7&8). Professionalism standards and training on these specific EAS management methods and tool are required to become authorized.

Typically in the company's **105** (FIG 1&7) EAS foundation data file **107** (FIG 1&7) there is significant outstanding EAS management work that is readily evident from reports and analysis produced in EAS management application **108** (FIG 1&7 and reference application CD). A majority of this work is shown on FIG 6 as all requirements **155** (FIG 4) between the system potential line **116** (FIG 6) and the system usage line **117** (FIG 6). The EAS management team **267** (FIG 7) pursues this work based on system requirement **155** (FIG 4) priority, ease of implementation, and availability of company **105** (FIG 1&7) personnel and capital.

The business process consultant **110b** (FIG 1&7) and members of the company **105** (FIG 1&7) EAS management team **267** (FIG 7) collaborate in the EAS management application **108** (FIG 1&7 and reference application CD). Because of the fact that some or all members may be at different locations and/or traveling the company **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) is made available on a web server for easier access. The EAS management application **108** (FIG 1&7 and reference application CD) runs as a standalone system and is installed on a web server for remote access. The EAS management application **108** (FIG 1&7) has user-based access levels **161** (FIG 4) to protect sensitive data from inadvertent change or viewing (this level of user control is not included in the code on the application CD).

Another reason for the company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) being located on the Internet **274** (FIG 7) is for the EAS research manager/function **114** (FIG 1,7&8) to monitor the company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7).

The EAS research manager/function **114** (FIG 1,7&8) conducts diagnostics **270** (FIG 7) on the company's **105** (FIG 1&7) EAS foundation data file **107** (FIG 1&7) on a periodic

basis and at any other specific times based on late breaking information about new EAS that affects the company **105** (FIG 1&7) or significant information about a company's **105** (FIG 1&7) peer group. These elements of the EAS management system are described only and this portion of the functionality is not included in the EAS system research database **293** (FIG 8) code on the application CD. This improvement monitor/advisory service **265** (FIG 7) provides to the company **105** (FIG 1&7) the following types of information:

Suggestions for when to make improvements based on inappropriate large differences in the company's **105** (FIG 1&7) current position on the system potential line **116** (FIG 6) and the system usage line **117** (FIG 6). Suggestions are made for the overall requirements **155** (FIG 4) profile and by requirement category (e.g. estimating/quoting).

Requirement **155** (FIG 4) areas, called categories, which have insufficient amounts of requirements **155** (FIG 4) based on the size and type of company **105** (FIG 1&7).

Suggested new requirements **155** (FIG 4) based on current market EAS offerings and progressive business process methodology and information about the company's **105** (FIG 1&7) current EAS systems' **106a** (FIG 1) capabilities for these new suggested requirements **155** (FIG 4).

Suggest new Issues **156** (FIG 4) to consider which upon review for the company **105** (FIG 1&7) may distil to new requirements **155** (FIG 4) or process improvement Tasks **157** (FIG 4).

Based on the EAS research manager's **114** (FIG 1,7&8) knowledge of current market packages, suggested general improvement opportunities based on upgrades to the company's **105** (FIG 1&7) existing EAS systems **106a** (FIG 1). Estimated benefits of continuing to improve major EAS types of the existing EAS system **105** (FIG 1&7), such as ERP **120** (FIG

3), as compared to the financial return of upgrading portions of the EAS system **106a** (FIG 1) to current market EAS solutions

Compare how the company's **105** (FIG 1&7) system effectiveness is to a peer group of companies **262** (FIG 7). This is a comparison of the company's **105** (FIG 1&7) current position on the system potential line **116** (FIG 6) and system usage line **117** (FIG 6). In addition, comparisons about how the company's **105** (FIG 1&7) system potential **116** (FIG 6) and usage **117** (FIG 6) percentages are trending over time as compared to the peer group **262** (FIG 7) and the company's **105** (FIG 1&7) established EAS improvement plan.

Check the data quality to determine the condition of the company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) and calculate the financial gain or loss based on their past progress and readiness to make improvements.

Based on the overall condition of the company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7), make general recommendations about high-level strategies for improvement.

For multi-location companies the information provided by the EAS research manager **114** (FIG 1,7&8) is presented in an overall company **105** (FIG 1&7) view and by business unit within the overall company **105** (FIG 1&7).

This offers real-time updates on current market conditions **190** (FIG 5) for the capability of EAS software vendors **264** relative to the company's **105** (FIG 1&7) EAS systems **106a** (FIG 1).

In addition to maintaining information on EAS packages, the EAS research manager/function **114** (FIG 1,7&8) is a clearinghouse for best practices **266** (FIG 7) and other EAS related topics. Information on best practices **263** (FIG 7) comes from research on the Internet **274** (FIG 7) and other resources. These also are significantly developed from ideas

and suggestions **272** (FIG 7) from EAS management teams **267** (FIG 7) as they exercise and conduct the overall EAS improvement management process as shown in FIG 5. Other information comes from industry forums and other software product information **260** (FIG 7) and general IT industry information **261** (FIG 7) available in trade journals and the Internet **274** (FIG 7). This information is reviewed by the EAS research manager/function **114** (FIG 1,7&8) and selected consultants **110b** (FIG 1&7) and integrated with the baseline EAS management methodology **100** (FIG 1&7). These results are distributed back to all EAS management teams **267** (FIG 7) in the form of updated methodology and enhancement to the EAS management application **108** (FIG 1&7 and reference application CD).

Select and replace systems

The process for EAS system selection **191** is graphically shown on FIG 5. The details contained in the company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) can be presented in the EAS management application **108** (FIG 1&7 and reference application CD) to readily show the current EAS system **106a** (FIG 1) potential to meet all requirements **155** (FIG 4) and the current utilization level **117** (FIG 6). The EAS research manager **114** (FIG 1,7&8) can provide statistics about current market EAS systems to compare to the company's **105** (FIG 1&7) current EAS systems **106a** (FIG 1). This research **294** (FIG 5) is provided on a package type basis, for example ERP **151** (FIG 4). From this information financial cost benefit studies can be made to detect the financially correct time to replace specific portions of the EAS system **106a** (FIG 1). This is shown in FIG 6 as the decline in the system potential line **116** in year three that is analyzed to justify a system replacement shown by the large increase in the system potential line **118**.

The process for EAS system selection **191** (FIG 1&5) is broken into three major phases **192** (FIG 5), **197** (FIG 5), **202** (FIG 5).

Phase 1: The phase-1 process **192** (FIG 5) entails ensuring the requirements profile **180** (FIG 1&5) is complete and models requirements **155** (FIG 4) that are projected to be needed in the next 3 years. Use the interview and data management techniques **180** (FIG 1&5) described previously to develop the original EAS foundation data **107** (FIG 1&7) for the company **105** (FIG 1&7) for improvement management of existing EAS systems **106a** (FIG 1).

If a cost justification analysis **194** (FIG 5) is necessary, isolate high and critical weighted requirements **155** (FIG 4) that are not met by current systems and study the value of these functions being automated by modern EAS system. Use reporting capability in the EAS management application **108** (FIG 1&7 and reference application CD) to drill down to this subset of system requirements **155** (FIG 4).

Submit the company **105** (FIG 1&7) EAS foundation data file **107** (FIG 1&7) to the EAS research manager **114** (FIG 1,7&8). The built-in requirements **155** (FIG 4) (requirements that the EAS research manager **114** (FIG 1,7&8) has information on selected EAS packages) contained in the EAS foundation data file **107** (FIG 1&7) are compared to the functional capabilities of a list of candidate EAS. This candidate list is initially screened for an appropriate cost and complexity zone, for the size of the company **105** (FIG 1&7), and a general suitability match based on the company's **105** (FIG 1&7) industry focus. The candidate EAS systems are ranked by an overall percentage functional match to the company's **105** (FIG 1&7) requirements **155** (FIG 4) (that were pre-loaded in the requirements review) and the list is forwarded to the EAS management team **267** (FIG 7).

If further EAS research is needed the EAS research manager **114** (FIG 1,7&8) can produce specific queries into the EAS system research database **293** (FIG 8 and reference application CD). These queries are based on EAS specific characteristics such as operating system and hardware they run on, and other qualitative data about number of installations, financial condition, usability rankings, and quality of support. Also, data on specific EAS packages, not ranked on earlier reports, can be produced.

The long-list of candidate EAS systems **195** (FIG 5) is developed by the EAS management team **267** (FIG 7) from research from the EAS research manager and an independent review by the EAS management team **267** (FIG 7) of information on the Internet, similar companies as the company for which EAS is being selected. Also reviews of trade journals and industry forums similar of the company **105** (FIG 1&7) for which EAS is being selected. The results from all these sources will comprise an appropriately comprehensive long list of candidate solutions.

The company **105** (FIG 1&7) management debrief **196** (FIG 5) is presented by leaders of the EAS management team **267** (FIG 7) and is designed to relay important information to management that was discovered in the phase-1 process **192** (FIG 5). Many political, personnel, and process problems, relative to the selection and implementation of the ESA system being selected, are encountered in the phase-1 process **192** (FIG 5). Company **105** (FIG 1&7) management needs to lead the process to make many of these changes.

Phase 2: The phase-2 process **197** (FIG 5) entails reducing a long-list of EAS candidates for the package type, e.g. ERP **151** (FIG 4), being selected to a short-list of 2-4 candidates. The process begins by reviewing and processing Issues **156** (FIG 4) that are important and substantially related to the software project, which is shown as process steps

198 (FIG 5) and **199** (FIG 5). Use the reporting capabilities in the EAS management application **108** (FIG 1&7 and reference application CD) to filter the subset of Issues **156** (FIG 4) that meet this criterion. Issues **156** (FIG 4) should be resolved at least to the extent that it is clear that their final resolution will or will not create significant new requirements or discover current business process obstacles. As Issues **156** (FIG 4) are resolved, they may spawn other Issues **156** (FIG 4), Tasks **157** (FIG 4), and system requirements **155** (FIG 4), which in turn are resolved in the same way. The prioritized and methodical retirement of Issues **156** (FIG 4) improves clarity of selection criteria and the ability to prepare new EAS and the business **105** (FIG 1&7) for implementation.

Fifteen to 30 critical differentiators **200** (FIG 5) are developed. Use the capabilities in the EAS management application **108** (FIG 1&7 and reference application CD) to develop a report of all critical and high-weighted requirements **105** (FIG 1&7) for the package type, such as ERP **151** (FIG 4), being selected. From this list develop 10 to 15 critical functional differentiators. Additionally, develop 5 to 10 qualitative differentiators. Consider qualitative items such as: cost of total ownership/upgrades, progressiveness of an EAS vendor for e-Business features, progressiveness of an EAS vendor's technology, the financial condition of the EAS vendor, the quality of support (local, etc.), ease of use, scalability of the package, and connectivity to important third-party packages.

All long-list candidate EAS packages are measured against the critical differentiators in a weighted matrix. One axis of this matrix will be the differentiator, which will include a data column for a differentiator weighting (scale of 1-10). The other axis is the long list of candidate EAS systems. A member of the EAS management team **267** (FIG 7) interviews a knowledgeable person about each EAS candidate on the list and provide a score on the matrix

between 0 and 10 for each question asked. For each matrix scoring made, record the confidence in the answers accuracy, using a scale of high, medium, and, low. The matrix will calculate a weighted score for each long-list candidate EAS package (the score is developed from a sum of the product of each differentiator score times the differentiator weighting value). After the first data is collected on the long list candidates, observe the composite scores on the Long-list Matrix **201** (FIG 5) to see if leading EAS packages are rising to the top. If it is not clear, review current matrix answers and refine the ones with a low confidence. If this does not raise two to four clear EAS system leaders, review the requirements **155** (FIG 4) for more appropriate differentiators and interviewing EAS vendors until the field has been narrowed to two to four candidates for detailed demonstrations.

Phase 3: The phase-3 process **202** (FIG 5) entails detailed review of the short list candidate packages (requests for information (RFI) document **203** (FIG 5), software demonstrations **204** (FIG 5) (conducted in the demonstration management module **159** of the EAS management application **108** (FIG 1&7 and reference application CD)), site visits **205** (FIG 5), negotiate contracts toward making the selection **206** (FIG 5).

The request for information (RFI) document **203** (FIG 5) represents a formal communication with a selected EAS vendor **111** (FIG 1,7&8). The RFI document **203** (FIG 5) included details about the company **105** (FIG 1&7) such as the type of business, company size, locations, and trends, company **105** (FIG 1&7) plans and goals relevant to the EAS sought. Also, the modules or major areas of functionality in question, the number of concurrent seats required, and current EAS system capabilities and reason a new EAS system is sought.

Further, the RFI document **203** (FIG 5) asks for details from the EAS vendor **111** (FIG 1,7&8) such as, number of installations of the candidate system overall and for companies similar to the company **105** (FIG 1&7) selecting a system. Also, EAS vendor's **111** (FIG 1,7&8) size, age, and financial condition, user references, technical support/training resources, details of user groups, and estimated total cost of ownership based on the description of need.

Product demonstrations **204** (FIG 5) are a hands-on review of a candidate EAS that show a series of transactions that model business flow at the company **105** (FIG 1&7). Demonstrations of requirements **155** (FIG 4) should typically be conducted on all short-list EAS candidates **160** (FIG 4). This is an opportunity to observe general package performance and feel. EAS product demonstrations **204** (FIG 5) should not be conducted before this time, as it is typically a waste of all parties time. And worse could be misleading for the company **105** (FIG 1&7) since their clarity on actual priorities may not be clear.

Use the demonstration management module **159** (FIG 4) of the EAS management application **108** (FIG 1&7 and reference application CD) to manage the demonstration process **204** (FIG 5). First use system reporting to isolate requirements **155** (FIG 4) with higher weighting and select from this group the subset to be demonstrated. Selected system requirements **155** (FIG 4) are then flagged for demonstration in the EAS management application **108** (FIG 1&7 and reference application CD). For requirements **155** (FIG 4) selected for demonstration, record in the requirement specific notes data field of the EAS management application **108** (FIG 1&7 and reference application CD), any information available about the type of transactions and volume so the demonstration **204** (FIG 5) can be better tailored to the company's **105** (FIG 1&7) need.

The EAS management team **267** (FIG 7) schedules demonstrations so that EAS vendors **111** (FIG 1,7&8) can be granted an extension without disrupting the timing of the project. Demonstrations **204** (FIG 5) take up to 8 hours depending on the EAS package type, such as CRM **152** (FIG 4). Members of the EAS management team **267** (FIG 7) record how well a candidate package performs a requirement in the EAS management application **108** (FIG 1&7 and reference application CD).

The demonstration answer collected for each requirement **155** (FIG 4) shown by each short-list EAS vendor **160** (FIG 4) are 1) if the feature is or is not supported (supported response), 2) how well it is supported (score response), 3) how confident the demonstration observer was in these two answers (confidence response), and 4) requirements/candidate software specific notes. Use the EAS management application **108** (FIG 1&7 and reference application CD) to produce a report of the requirements **155** (FIG 4) to be demonstrated for each member of the EAS management team **267** (FIG 7) participating in the demonstration.

Support responses: The support response shows how the requirement **155** (FIG 4) is effected by the candidate EAS package, if at all. The data values are:

Yes: The package directly supports the requirement.

Yes/Custom: The package does not directly support the requirement but the vendor demonstrates that it is feasible and reasonable to customize the package to support the requirement. If able, record the details and estimated costs of this customizing in the Notes field.

Yes/3rd Party: The package does not directly support the requirement but the vendor indicates that a compatible and reasonable third party software is available that does support it. If able, record the details and estimated costs of this third party strategy in the Notes field.

Yes/Future: If the package will support requirement through functionality in a future release.

No: The package does not support the requirement and there are no other reasonable methods identified to accomplish the requirement.

Unanswered: Denotes that the requirement has not been considered for the software package under review.

Score response: Scores ranging from 1 to 5 [5 being the highest] identify how well the candidate EAS package achieved a requirement.

Confidence response: Each member of the EAS management team **267** (FIG 7) that observes the demonstration **204** (FIG 5) records their confidence in the support and score answers provided. Typically, any requirement claimed to be achieved through customizing that is not immediately understood or through a third party package should receive a Low confidence value. If there are questions as to the technical experience of the person demonstrating the software, then all requirements that are not immediately observed need to be further confirmed and should receive a Low confidence. This information will be useful for refining the demonstration supported values, if necessary, and for completing the system audit for the package selected. Confidence values can be reviewed and managed with reporting options in the EAS management application **108** (FIG 1&7 and reference application CD).

When the demonstration is complete, consolidate the answers from members of the EAS management team **267** (FIG 7) that observed the demonstration and enter the composite score in the EAS management application **108** (FIG 1&7 and reference application CD). A report showing the weighted score for the candidate EAS that was demonstrated is available

in the EAS management application **108** (FIG 1&7 and reference application CD). This report enables an objective comparison of the functionality review of candidate EAS packages.

Other detailed reviews **205** (FIG 5) of candidate EAS include site visits or phone interview of current users of candidate EAS systems and visiting user group web site(s) and/or meetings.

Phase-3 of selection **202** (FIG 5) concludes with final negotiations between the EAS management team **267** (FIG 7) and candidate EAS vendors **111** (FIG 1,7&8) to select an appropriate EAS solution.

Implement new EAS

EAS system implementation planning and management **207** (FIG 1&5) is graphically shown on FIG 5. For the sample company **105** (FIG 1&7) the requirements and issues profiling **180** (FIG 1&5) has been largely developed in early project stages of EAS system selection **191** (FIG 1&5) and initial EAS system improvement **186** (FIG 1&5). If EAS system implementation planning and management **207** (FIG 1&5) is the initial use of any portion of the EAS management methodology **100** (FIG 1&7) the requirements/issues profiling **180** (FIG 1&5) is conducted in the same methods described earlier.

The next step is the implementation audit **209** (FIG 5) of the EAS. This is a process to comprehensively understand how a new EAS will meet a firm's functional requirements. The process locates and resolves issues about the software's suitability that are not thoroughly understood through the process of EAS system selection **191** (FIG 1&5). It is executed in the same manner as described earlier for the improvement management audit **188** (FIG 5).

The audit leader comes from the EAS management team **267** (FIG 7) and is knowledgeable about the company **105** (FIG 1&7) and the objectives for the newly selected

EAS management application. They will orchestrate the audit **209** (FIG 5) and oversee work with vendor/VAR personnel **111** (FIG 1,7&8).

Described in another way, the methodology **207** (FIG 5) and EAS management application **108** (FIG 1&7 and reference application CD) manage prioritized changes to the business process, personnel and/or software **210** (FIG 5) before and during implementation. During the implementation **212** (FIG 5) the EAS management application **108** (FIG 1&7 and reference application CD) continues to manage the requirement **155** (FIG 4), Issue **156** (FIG 4), and Task **157** (FIG 4) details.

When implementation is complete, the new EAS is managed under procedures of EAS system improvement **186** (FIG 1&5) discussed earlier.

ADDITIONAL EMBODIMENTS

Managing components of the EAS systems **106c** (FIG 1) that are produced from custom software development is supported by the EAS management system. Turning to FIG 3, in describing the preferred embodiment package software products **106b** (FIG 1) such as CRM **140** (FIG 3) were referenced. Package EAS is defined as EAS that is offered by a software vendor and is substantially ready for use with little or no customizing. For the company **105** (FIG 1&7), some of the package software products shown in FIG 3 may have some custom development elements and other major EAS functional needs may be completely generated from custom developed EAS software. The same process as described in the preferred embodiment for developing a company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) is conducted exactly the same regardless of where the company **105** (FIG 1&7) expects to find the correct EAS system **106a** (FIG 1) to meet the need. The process of

EAS system selection **191** (FIG 1&5) can precede exactly the same if there is any expectation that the EAS system **106a** (FIG 1) functionality being sought may be commercially available. If not, the EAS management team **267** (FIG 7) can present the functional specification produced from the EAS management application **108** (FIG 1&7 and reference application CD) to software developers. The functional specification is typically comprised of a list of requirements **155** (FIG 4) and Issues **156** (FIG 4) that the EAS management application **108** (FIG 1&7 and reference application CD) can output. The presentation and coordination of this plan with a software development team is not contemplated with the EAS management system, as there exists a well-established class of software products and methods for this purpose that was presented in the section Background-Discussion of Prior Art. The remaining major elements of the methodology for EAS implementation planning and management **207** (FIG 1&5) and ongoing EAS system improvement **186** (FIG 1&5) are executed in the same manner as described in the preferred embodiment, except for the following changes.

The requirements **155** (FIG 4) to be supported can be flagged as such under the Supported data field **163** (FIG 4). Since this is a custom EAS system **106c** (FIG 1), use the Supported data field **163** (FIG 4) value of Yes/Custom. Requirements **155** (FIG 4) that are not to be supported at this time become part of the outstanding requirements **155** (FIG 4) for future development or to be achieved in some other way.

The system audit Confidence data field **164** (FIG 4) can be used to record impressions on how well a requirement **155** (FIG 4) will be effected by the new custom EAS system **106c** (FIG 1). This is useful to highlight requirements **155** (FIG 4) on which there is a concern about how a custom EAS system **106c** (FIG 1) or custom functionality of a package EAS system **106b** (FIG 1) will support the requirement **155** (FIG 4). Flag the requirement **155** (FIG

4) with a Low confidence **164** (FIG 4) value and redouble efforts to challenge the new application's design for all requirements **155** (FIG 4) with a Low confidence **164** (FIG 4) value. These requirements can be isolated with reporting capability in the EAS management system **108** (FIG 1&7 and reference application CD).

When the custom EAS system **106c** (FIG 1) is implemented using the EAS system implementation planning and management process **207** (FIG 1&5), ensure its utilization/status data value **165** (FIG 4) is entered in the EAS management application **108** (FIG 1&7 and reference application CD).

Large manufacturing firms have 100s if not 1000s of suppliers that provide them parts, materials, and process services. The coordination of these suppliers is an important topic with large manufacturing firms, especially with new e-business options that are becoming available. The supply chain objectives of large manufacturers are significantly dependent on the EAS system's **106a** (FIG 1) condition of companies **105** (FIG 1&7) in the large manufacturing firm's supply chain. The EAS management system can be used to support large manufacturing firm to develop a requirements **155** (FIG 4) plan that meets their supply chain objectives and an EAS system improvement **186** (FIG 1&5) plan can then be effected at individual companies **105** (FIG 1&7) in the large manufacturing firm's supply chain so the individual company's **105** (FIG 1&7) readiness can be increased for better meeting the large manufacturers supply chain goals. The fundamental use of the EAS management system is the same as is described in the preferred embodiment.

EAS system **106a** (FIG 1) usage training development and procedure writing **211** (FIG 5) are facilitated by the EAS management application **108** (FIG 1&7 and reference application CD). The company's **105** (FIG 1&7) EAS foundation data **107** (FIG 1&7) priorities and

exceptions can be isolated with reporting features in the EAS management application **108** (FIG 1&7 and reference application CD) and are used to develop company-specific training courses and user procedures **211** (FIG 5).

ALTERNATIVE EMBODIMENTS

EAS vendors **111** (FIG 1,7&8) can use the EAS management system directly for EAS implementation planning and management **207** (FIG 1&5) and ongoing EAS system improvement **186** (FIG 1&5), for the EAS they sell and support, with the same methods described in the preferred embodiment. An alternative embodiment to the preferred use of EAS implementation planning and management **207** (FIG 1&5) and ongoing EAS system improvement **186** (FIG 1&5) would be for software vendors **111** (FIG 1,7&8) to have the EAS management system's functionality of the EAS management application **108** (FIG 1&7 and reference application CD) be included directly in their EAS application **106b** (FIG 1). In essence the functionality contained in the EAS management application **108** (FIG 1&7 and reference application CD) would now be a new module contained within the EAS vendor's **111** (FIG 1,7&8) EAS system **106b** (FIG 1) with dynamic links from the requirements **155** (FIG 4) plan to actual software functionality. The EAS vendor **111** (FIG 1,7&8) could send updated requirement **155** (FIG 4) profiles to its customers that include, 1) new functionality that a new version of the software **106b** (FIG 1) contains, and 2) test functionality that the EAS vendor **111** (FIG 1,7&8) would like to see current customers response to. The company **105** (FIG 1&7) would decide if these new functionality (in the form of candidate requirements **155** (FIG 4)) are needed. If needed the EAS management application **108** (FIG 1&7 and reference application CD) functionality could produce automated cost benefit modeling, to

help the EAS vendor's **111** (FIG 1,7&8) customers assess the appropriateness of the EAS system **106b** (FIG 1) upgrade. This version of the EAS management application **108** (FIG 1&7) is describe only and this version of the functionality is not included in the EAS management application **108** (FIG 1&7) code on the application CD.

Additional uses for EAS vendors **111** (FIG 1,7&8) are to use the EAS system research database **293** (FIG 8 and reference application CD) to compare their specific EAS system **106b** (FIG 1) to their competitors in general and for specific sales opportunities. Further they can use the trending observations on multiple company profiles **262** (FIG 7) to better determine what companies in their target market are asking for and in what areas major problem exist for these companies.

An additional use for EAS vendors **111** (FIG 1,7&8) is to use a portion of the functionality of the EAS management application **108** (FIG 1&7) in the selling process. EAS vendor's **111** (FIG 1,7&8) sales personnel can work with a prospect to generate an initial EAS system requirements **155** (FIG 4) profile using the process that automates an initial requirements plan **155** (FIG 4) as discussed in the preferred embodiment. This requirements profile **155** (FIG 4) is based on a set of standard requirements for which there is data on the EAS vendor's **111** (FIG 1,7&8) EAS system **106b** (FIG 1). The EAS management application **108** (FIG 1&7) has reporting features to illustrate a weighted scoring of how well the EAS vendor's **111** (FIG 1,7&8) EAS system **106b** (FIG 1) supports the prospect's needs. EAS vendors **111** (FIG 1,7&8) also may order research from the EAS research manager **114** (FIG 1,7&8) on competing EAS systems **106b** (FIG 1) based on the prospect specific requirements profile **155** (FIG 4) generated. This process provides a framework to emphasize a particular EAS system's **106b** (FIG 1) strengths, but also discuss strategies to mitigate any weaknesses

(workarounds, customizing, third party add-ons, etc.). With EAS systems **106b** (FIG 1) that are basically a good fit, these weaknesses are typically minor (relative to similar weaknesses in competing solutions), so this becomes an opportunity for the EAS vendor's **111** (FIG 1,7&8) sales function to impress the prospect by demonstrating the workaround. This consultative sales process typically is appreciated by prospects. As the EAS vendor's **111** (FIG 1,7&8) salesperson makes a credible case for the functionality match, they can proceed to promote other important areas such as service and support. This process can continue with further structured analysis to support the sales effort, product demonstrations, and sets the stage for the use of the EAS management system methods for EAS implementation planning and management **207** (FIG 1&5) and ongoing EAS system improvement **186** (FIG 1&5). This version of the EAS management application **108** (FIG 1&7) is describe only and this version of the functionality is not included in the EAS management application **108** (FIG 1&7) code on the application CD.

Application service providers (ASP) offer a service to host EAS systems **106a** (FIG 1) for companies **105** (FIG 1&7). The ASP maintains the EAS systems **106a** (FIG 1) on their computer servers and the company **105** (FIG 1&7) accesses the EAS system **106a** (FIG 1) remotely. ASPs can use the EAS management system to add further value to their services. Specifically, the EAS implementation management and planning process **207** (FIG 1&5) and the ongoing EAS system improvement **186** (FIG 1&5). Also, the specific elements of the EAS management system discussed are a practical addition to help ASPs serve their clients better and have a more concrete basis for developing ongoing revenue.

The condition of a company's **105** (FIG 1&7) EAS systems **106a** (FIG 1) will increasingly be an indicator of the company's **105** (FIG 1&7) health and viability. Statistical

representations of a company's **105** (FIG 1&7) condition could be produced from the data stored in the EAS management application **108** (FIG 1&7 and reference application CD). This representation starts with the company's system potential statistics and system usage statistics, which are automatically calculated in the EAS management application **108** (FIG 1&7 and reference application CD).

Insurance companies that insure businesses in general and/or EAS systems specifically could find this information useful. They could use the scores to provide rate adjustments and the global body of data could be used to detect aberrations, industry risk trends, and fraud.

The banking industry could find this information useful as these EAS system statistics have a correlation to the general and therefore financial health of the company. This in turn is used to make decisions about loans and terms.

Mergers and acquisitions (M&A) firms conduct deep reviews of candidate M&A companies and could find statistics about the EAS system **106a** (FIG 1) condition of a company valuable for developing valuations, negotiations, and developing plans for integrating companies EAS systems **106a** (FIG 1).

Other process improvement activity or other diagnostics that are subject to many requirements/objectives, issues/problems, tasks/actions, and personnel involved with processing all these items is a candidate to use the basic data engine of the EAS management application **108** (FIG 1&7 and reference application CD). Further, if the new diagnostic is related to business process activities then the network of business process consultants **110a** (FIG 7) could readily be trained to deploy the diagnostic. These consultants **110a** (FIG 7) know the EAS management application **108** (FIG 1&7 and reference application CD) and they are business process experts, therefore they can be leveraged to conduct this work which

can be helpful to the developer of the new diagnostic. This version of the EAS management application **108** (FIG 1&7) is describe only and this version of the functionality is not included in the EAS management application **108** (FIG 1&7) code on the application CD.

CONCLUSION, RAMIFICATIONS, AND SCOPE

Thus the reader will see that the EAS management system has addressed the main problems companies have in using EAS. The EAS management system contains structured and economical methods to 1) formalize proper EAS management methodology, 2) manage EAS project details, and 3) coordinate and facilitate the appropriate participation by internal company personnel and external experts. As explained in the Background - Discussion of Prior Art section, Prior Art is lacking in all three of these areas.

The ramifications of the EAS management system are large. Conservative calculations indicate that a 10% improvement of the System Usage line **117** (from 60% usage to 70% usage) can add 3-5% to a company's bottom line. The tangible benefits to this company are large and there are other intangible benefits that accrue to a more profitable and better run company. The collective effect of many companies conducting practical EAS management would translate to a large efficiency boost to the economy and those employees that work for these companies.

While the above description contains many specifications these should not be construed as limitations on the scope of the invention, but rather as an exemplification of the preferred and alternate embodiment thereof. Many other variations are possible. Accordingly, the scope of the invention should be determined not by the embodiments illustrated, but by the appended claims and their legal equivalents.